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IN THE CLAIMS

Amendments to the claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A method for transmitting non-real time and real time traffic in a connection oriented communications network wherein the traffic is carried between end users over virtual channel connections, and wherein groups of virtual channel connections can be aggregated into virtual path connections, the network comprising:

- (a) provisioning a network core which includes a core source and a core plurality of core nodes destination, the core source and the core destination having in communication over a virtual path connections, wherein separate virtual path connections are provided for real time and non-real time traffic therebetween, the path having one of a plurality of classes of transmission service, the non-real time traffic being received at the core source from a plurality of connections and each of the plurality of connections having one of the plurality of classes of transmission service, the method comprising the steps of:
- (b) provisioning an edge network which includes a plurality of edge nodes in communication with end users over said virtual channel connections, said edge nodes serving as aggregation points and segregation points for said virtual path connections in the network core;
- (c) (a) at the core source aggregation points, aggregating onto the virtual path connections and into an aggregate traffic stream the non-real time traffic received from said plurality of virtual channel connections, the non-real time traffic being transmitted on the virtual path connections as the aggregate traffic stream without regard to which of the plurality of

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virtual channel connections the non-real time traffic is associated and without regard to the class of transmission service of such plurality of virtual channel connections;

- (b) at the ~~core destination~~segregation points, segregating the aggregate traffic stream so transmitted on the virtual path connections according to which of the plurality of virtual channel connections the non-real time traffic is associated; and

wherein at least two of the ~~plurality of said~~ virtual channel connections aggregated into a said virtual path connection in the network core do not respectively have a same class of transmission service, wherein flow control is applied to said ~~aggregate traffic stream~~virtual path connections in said network core between the ~~core source and the core destination~~aggregation points to thereby regulate the rate of transmission of the non-real time traffic along the virtual path connections, the flow control terminating at ~~said said core source and at said core destination~~aggregation points and said segregation points and, wherein the virtual path is~~connections are~~ provisioned with a guaranteed transmission bandwidth and dynamic bandwidth allocation such that when additional bandwidth becomes available said flow control permits said non-real time traffic to be transmitted on the virtual path connection at an increased rate, wherein traffic management including the assignment of bandwidth in said virtual path connections, for said virtual channel connections is performed at said aggregation points, and wherein traffic management in said network core is performed only on said virtual path connections without differentiating among virtual channel connections carried on the same virtual path connection even if said virtual channel connections carried on the same virtual path connection have different classes of transmission service.

Claim 2 (Currently amended): The method of Claim 1, wherein the connection oriented communications network is an ATM network, ~~the plurality of connections are Virtual Channel Connections (VCCs), the path is a non-real time Virtual Path Connection (VPC), the non-real time traffic is ATM traffic and the plurality of classes of transmission service are ATM service categories.~~

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Claim 3 (Currently amended): The method of Claim 2, wherein the flow control applied between the ~~core source and the core destination~~ aggregation and segregation points includes a flow control algorithm whereby the rate of transmission of the non-real time traffic on the path is regulated by providing feedback information to the ~~core source~~ aggregation point concerning congestion at a contention point on the virtual path connection.

Claim 4 (Currently amended): The method of Claim 2, wherein the flow control applied between the ~~core source and the core destination~~ aggregation point and the segregation point includes a flow control algorithm whereby the rate of transmission of the non-real time traffic on the virtual path path connection is regulated by providing an explicit rate of transmission to the ~~core source~~ aggregation source.

Claim 5 (previously presented): The method of Claim 4, wherein the non-real time Virtual Path Connection operates according to an Available Bit Rate (ABR) service category.

Claim 6 (Currently amended): The method of Claim 1, wherein at least one of the plurality of ~~connections~~ virtual channel connections aggregated onto the virtual path connection is provisioned with a guaranteed bandwidth and the guaranteed transmission bandwidth of the path is obtained by summing the guaranteed transmission bandwidths for the at least one of the plurality of connections aggregated onto the path.

Claim 7 (Currently amended): The method of Claim 6, wherein the guaranteed transmission bandwidth for the at least one of the plurality of ~~connections~~ virtual channel connections is a guaranteed minimum transmission bandwidth and the guaranteed transmission bandwidth for the path is a guaranteed minimum transmission bandwidth.

Claim 8 (Currently amended): The method of Claim 7, wherein transmission bandwidth in the network core is allocated between real time traffic and non-real time traffic, and wherein a share of the transmission bandwidth in addition to the guaranteed minimum transmission bandwidth for the virtual path connection is made available to the virtual path connection if the transmission bandwidth allocated to the real time traffic is unused.

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Claim 9 (Currently amended): The method of Claim 7, wherein a share of the transmission bandwidth in addition to the guaranteed minimum transmission bandwidth for one of the plurality of ~~connections~~virtual channel connections is made available to the one of the plurality of ~~connections~~virtual channel connections if the transmission bandwidth allocated to another of the plurality of ~~connections~~virtual channel connections is unused.

Claim 10 (Currently amended): The method of Claim 5, wherein the ~~core source-to-core destination~~ flow control applied between the ~~core source and the core destination~~aggregation and segregation points is provided by a plurality of ABR flow control segments between the ~~core source and the core destination~~aggregation and segregation points.

Claim 11 (Currently amended): The method of Claim 10, wherein the ~~core source~~aggregation point further comprises a set of queues each corresponding to one of the plurality of classes of transmission service that are associated with the plurality of connections, and wherein the non-real time traffic received over said each of the plurality of virtual channel connections is queued in the queue associated with the class of transmission service associated with each virtual channel connection before aggregating the non-real time traffic onto the path.

Claim 12 (Currently amended): The method of Claim 10, wherein the ~~core source~~aggregation point further comprises a queue for said each of the plurality of virtual channel connections and wherein the non-real time traffic received over said each of the plurality of virtual channel connections is queued in the queue associated with the connection before aggregating the non-real time traffic onto the virtual path connection.

Claim 13 (canceled)

Claim 14 (Currently amended): The method of Claim ~~13~~11, wherein the traffic management ~~comprises~~includes scheduling of the plurality of virtual channel connections onto the virtual path connection.

Claims 15-24 (cancelled).

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Claim 25 (Currently amended): A communications network comprising a network core including a plurality of core nodes in communication over virtual path connections and an edge network including a plurality of edge nodes in communication with end users over virtual channel connections, wherein traffic entering the network core is aggregated from a plurality of virtual channel connections onto aggregate traffic streams comprising virtual path connections within the network core and wherein traffic exiting the network core is segregated from said aggregate traffic streams onto virtual channel connections outside the network core, the traffic comprising real time traffic and non-real time traffic, the non-real time traffic which enters the network core and is aggregated onto an aggregate traffic stream is received from virtual channel connections that each have one of a plurality of classes of transmission service such that at least two connections have classes of transmission service different from each other, the real time traffic and the non-real time traffic each being aggregated into respective real time aggregate traffic streams and non-real time aggregate traffic streams comprising separate virtual path connections, each of the non-real time aggregate traffic streams having one of the plurality of classes of transmission service, each of the non-real time aggregate traffic streams is provisioned with dynamic bandwidth allocation and a guaranteed transmission bandwidth, the real time traffic in each real time path aggregate traffic stream being transmitted from a corresponding core-sourceaggregation point to a corresponding core-destinationsegregation point according to a first class of path transmission service and the non-real time traffic on each non-real time path aggregate traffic stream being transmitted from a corresponding core-sourceaggregation point to a corresponding core-destinationsegregation point according to a second class of path transmission service, and wherein flow control is applied to each non-real time aggregate traffic stream between the core-sourceaggregation point and the core-destinationsegregation corresponding to each non-real time aggregate traffic stream to thereby regulate the rate of transmission of the non-real time traffic associated with each said non-real time aggregate traffic stream and permit the transmission rate to be increased as additional bandwidth becomes available, the flow control terminating at said core-sourceaggregation point and at said core-destinationsegregation point corresponding to each non-real time aggregate traffic stream, and wherein traffic management, including assignment of bandwidth in said virtual path connections, for said virtual channel connections is performed at said aggregation points, and wherein

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traffic management in said network core is performed only on said virtual path connections without differentiating among virtual channel connections carried on the same virtual path connection even if said virtual channel connections carried on the same virtual path connection have different classes of service.

26. (Currently amended) A method of transmitting real time and non-real time traffic across a core-connection-oriented communication network wherein the traffic is carried between end users over virtual channel connections, and wherein groups of virtual channel connections can be aggregated into virtual path connections, comprising:

- a) provisioning a network core which includes a plurality of core nodes in communication over virtual path connections, wherein separate virtual path connections are provided for real time and non-real time traffic;
- b) provisioning an edge network which includes a plurality of edge nodes in communication with end users over said virtual channel connections, said edge nodes serving as aggregation points and segregation points for said virtual path connections in the network core;
- ac) establishing an end-to-end connection between a source node and a destination node respectively at an edge of said core network, said connection having a maximum usable bandwidth and a minimum guaranteed bandwidth for said virtual path connections which are provisioned with dynamic bandwidth allocation, and flow control for said virtual path connections wherein as additional bandwidth becomes available said flow control permits said non-real time traffic to be transmitted on said virtual path connections at an increased rate;
- bd) at said source node aggregation points, dynamically mapping all non-real time traffic flows in said virtual channel connections for said destination node segregation points to said virtual path

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connections based on a service category of each traffic flow of ~~said non-real time traffic flows~~ virtual channel connection and a minimum guaranteed transmission rate for said virtual channel connections;

- ee) aggregating all said non-real time traffic flows into an aggregated traffic flow in said virtual path connections by distributing the minimum guaranteed bandwidth of said virtual path connection among said non-real time traffic flows such that said each non-real time traffic flow receives a share of said minimum guaranteed bandwidth;
- ef) dividing any remaining bandwidth at said aggregation points following said distribution of the minimum guaranteed bandwidth available on said virtual path connection among said non-real time traffic flows according to a fairness policy; and
- eg) routing said aggregated traffic flow along said virtual path connections toward said ~~destination nodes~~ segregation points, without differentiating among said non-real time traffic flows at any core node in the connection.

27. (Currently amended) The method of transmitting non-real time traffic across a ~~connection-oriented~~ communication network as claimed in claim 26, wherein one service category of one traffic flow of said non-real time traffic flows is selected from CBR/r-VBR, nrt-VBR, UBR and ABR.

28. (Currently amended) The method of transmitting non-real time traffic across a ~~connection-oriented~~ communication network as claimed in claim 27, wherein the ABR service category supports:

a minimum cell rate (MCR) guarantee representing a static bandwidth required for the network to achieve a quality of service guarantee for constituent traffic flows;

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dynamic bandwidth allocation allowing access to unused bandwidth
in the network for ABR and, UBR VCCs: and network fairness
through explicit rate (ER) bandwidth allocation.

29. (Currently amended) The method of transmitting non-real time traffic across a ~~peer~~-connection-oriented communication network as claimed in claim 26, wherein the fairness policy performs flow control utilizing feedback information from the destination node for dividing said any remaining bandwidth.

30. (Currently amended) The method of transmitting non-real time traffic across a ~~peer~~-connection-oriented communication network as claimed in claim 29, wherein flow control is explicit rate (ER) flow control.

31. (Currently amended) The method of transmitting non-real time traffic across a ~~peer~~-connection-oriented communication network as claimed in claim 30, wherein division of said any remaining bandwidth is dynamically adjusted based on feedback from specific core nodes.

32. (Currently amended) The method of transmitting non-real time traffic across a ~~peer~~-connection-oriented communication network as claimed in claim 31, wherein the connection is segmented due to flow control fragmentation.